to all the children falling ill. Similar effects were noted among adult communities, particularly during the Sixth World Youth Festival.

A great part in the prevention of the spread of the influenza epidemic was played by health education work among the people: the publication on a mass scale of placards, posters, pamphlets and leaflets, systematic radio and television propaganda, the printing of a series of articles on influenza in the mass-circulation press, the showing of films on the subject, and similar measures.

The Asian Influenza Pandemic in Turkey, 1957-58

by Dr ZÜHDI BERKE, *Director of the Vaccine and Serum Department and of the Department of Virology, Refik Saydam Central Institute of Hygiene, Ankara, Turkey.*

Spread of the pandemic. Spreading from Hong Kong and Singapore by air, sea and land, Asian influenza reached Iran, Iraq and Syria, the south and south-eastern neighbours of Turkey, in July 1957. In view, *inter alia*, of the extensive trade carried on over the Turkish-Syrian border and of the extensive traffic along the main road between Turkey and Iran, it was evident that the pandemic could not fail to involve Turkey. The Ministry of Health and Social Welfare accordingly took the necessary precautions to deal with air and sea passengers arriving in Turkey and with the Mecca pilgrims who would arrive overland. Thus two specialists were sent at the end of July 1957 to study the situation in the cities on the south-eastern border of Turkey and to take throat swabs and throat washings as well as serum samples for examination. These were forwarded by air to the Influenza Centre at the Refik Saydam Central Institute of Hygiene in Ankara. Influenza infections were discovered among the civilian population and among police and military units. It was learned at the same time that influenza was also breaking out in Kars Province along the main Turkish-Iranian road and among civilians and the military elsewhere in eastern Turkey. On 7 August throat swabs from patients diagnosed as suffering from influenza were sent by air from Erzurum to the Influenza Centre, and in the second week of August cases were notified in the provinces to the west of Erzurum.

In Ankara, influenza cases were observed in the first week in August and throat swabs and sera from patients were received from various civil hospitals and from the Air Forces in Ankara.

By the second week of August cases of influenza were reported from almost every part of Turkey; throat swabs and sera were forwarded from NATO Air Force personnel in Adana on 14-19 August, from Inebolu (on the Black Sea coast) on 15 August, and from NATO Air Force personnel in Izmir from 2 August to 18 September.

In August and September, owing to the fact that the schools were on holiday and that the agricultural population was scattered in the fields, influenza was observed in epidemic proportions only in the larger cities with high population densities and among factory workers and similar concentrated communities as well as in military units. In October, after the schools opened, cases were observed among the students and the infection spread very rapidly, to such an extent that the schools had to be closed again as 25%-30% of the students were not attending. It was in this month that the epidemic reached its peak.

Incidence and distribution. It has not been possible to gather completely correct figures on the total number of influenza cases as the disease is not a notifiable one in Turkey. However, the number of civilian cases reported from August 1957 to May 1958 was 378 330 (see Table 1). If twice this number (i.e., 756 660) is added as the assumed number of unnotified and subclinical cases—giving a total of 1 134 990 civilian cases—and the 31 356 military cases (Table 2) are also reckoned in, then the approximate number of persons suffering from Asian influenza in the season 1957-58 comes to 1 166 346. The deaths in this epidemic, which all occurred in persons under 5 or over 50 years of age, are shown in Table 3.

The following figures show the percentage of cases by age-group among 100 of the cases treated in the Infectious Diseases Clinic of the Faculty of Medicine, Ankara:

Age-group (years)	*Percentage of cases*
11-19	31
20-29	48
30-39	12
40-49	6
50-59	2
60-69	1

In these same patients, the distribution by occupation was:

Occupation	*Percentage of cases*
Medical and nursing students	33
Nurses and hospital staff	29
Housewives	11
Employees	10
Villagers	9
Manual labourers	8

However, in the country at large, although influenza infections were seen at all ages and in all occupations, the highest rates occurred in school-children, factory workers and military personnel.

Symptoms. For the above group of 100 patients, the symptoms at onset were coldness and fever in 60%, muscular pain and lassitude in 15%, headache and pain in the extremities in 12%, stomach ache, nausea or

TABLE 1. NUMBERS OF REPORTED CASES OF INFLUENZA AMONG CIVILIAN POPULATION IN TURKEY, AUGUST 1957 - MAY 1958

Month	Week	Number of cases
Aug. 1957	1	80
	2	9 082
	3	12 133
	4	31 780
	Total	53 075
Sept. 1957	1	16 139
	2	37 249
	3	34 450
	4	28 927
	Total	116 765
Oct. 1957	1	7 781
	2	16 949
	3	50 572
	4	50 666
	Total	125 968
Nov. 1957	1	2 057
	2	13 145
	3	10 987
	4	23 480
	Total	49 669
Dec. 1957	1	734
	2	3 923
	3	8 070
	4	4 811
	Total	17 538
Jan. 1958	1	2 504
	2	1 684
	3	2 218
	4	3 694
	Total	10 100
Feb. 1958	1	30
	2	921
	3	164
	4	1 004
	Total	2 119
March 1958	1	964
	2	153
	3	252
	4	107
	Total	1 476
April 1958	1	454
	2	26
	3	487
	4	653
	Total	1 620

TABLE 2. NUMBERS OF REPORTED INFLUENZA CASES IN MILITARY UNITS IN TURKEY IN 1957

Date (1957)	Number of cases *
10-17 July	157
18-24 July	86
25-31 July	379
1-7 August	2 511
8-14 August	5 279
15-21 August	8 355
22-28 August	6 767
29 Aug. - 4 Sept.	3 377
5-11 September	2 192
12-18 September	977
19-25 September	474
26 Sept. - 2 Oct.	340
3-10 October	297
11-17 October	97
18-24 October	47
25-31 October	21
Total	31 356

*** No influenza deaths were reported among military personnel.**

TABLE 3. DEATHS FROM ASIAN INFLUENZA IN TURKEY

Month	City	Deaths	Total
Aug. 1957	—	—	—
Sept. 1957	Siirt	5	
	Hatay	2	7
Oct. 1957	Balikesir	1	
	Diyarbakir	3	
	Hatay	2	
	Nigde	1	
	Ankara	4	11
Nov. 1957	Konya	3	3
Dec. 1957	Çankiri	4	
	Tekirdağ	2	6
Jan. 1958	Kastamonu	3	
	Tekirdağ	2	5
Feb. 1958	—	—	—
March 1958	—	—	—
April 1958	—	—	—
May 1958	—	—	—
		32	32

vomiting in 5%, catarrh or coughing in 4% and fainting or dizziness in 4%. Temperatures were normal in 15%, up to 38°C in 22%, 38°-40°C in 60% and over 40°C in 3%. In general, few unusual symptoms were seen in the course of the disease, which was usually mild, lasting three to seven days. Convalescence was long. The 32 deaths were caused by complications such as pneumonia or bronchopneumonia.

Laboratory findings. A total of 222 throat washings or throat swabs taken from civilian and military patients in different parts of the country was sent to the laboratory at the Influenza Centre between August 1957 and March 1958. Forty-one viruses were isolated from 176 specimens by egg culture, and complement-fixation tests showed these all to be of type A. Three of these strains were sent to the World Influenza Centre in London and confirmed to be of the Asian type. Haemagglutination-inhibition tests made with the standard influenza sera sent to us by the World Health Organization and the viruses isolated in our laboratory showed that the Turkish strains were identical with A/Singapore/1/57. In addition, 12 strains were shown to be related to A/Netherlands/36/56 in low titre. The first virus isolation was made on 16 August and the last on 19 December 1957.

During the epidemic 316 serum samples (including paired sera from 64 patients) were also received in the laboratory. The paired sera all showed the presence of antibodies in the first samples or an increase in titre in the second samples. In the remaining 188 sera antibodies were observed in 12 only (7%), probably because the samples were collected early in the course of the illness.

Treatment and prophylaxis. In view of the results obtained in experiments performed at an earlier date,[a] the administration of quinine together with vitamin C and aspirin was recommended as a preventive measure, and it was observed that those who took these drugs either escaped the infection completely or had a very mild attack.

In previous experiments in our laboratory it had been noted that even strong concentrations of antibiotics and of Merthiolate had not proved effective in the treatment of influenza, but quinine hydrochloride and the Japanese preparation, Nitromine, had been of some effect. These experiments were therefore repeated with the A/Singapore/1/57 strain isolated in Turkey during the pandemic with almost identical results. The quinine was, in these experiments, injected.

Vaccination experiments. During the influenza epidemic of 1950-51 a polyvalent vaccine, consisting of 25% virus A (PR8), 25% virus B (Lee) and 50% virus isolated during that epidemic, was prepared in our laboratory and used on a limited number of persons.[b] Later, experiments on animals showed that the addition of a bacterial anticatarrhal vaccine increased the strength and duration of the immunity produced, and this was consequently incorporated in the polyvalent vaccine. The first Turkish vaccine against

[a] Berke, Z. (1953) *Türk Ij. tecr. Biyol. Derg.*, **13**, 134

[b] Berke, Z. & Özlüarda, E. (1957) *Türk Ij. tecr. Biyol. Derg.*, **17**, 118

Asian influenza was prepared in July 1957 with an A/Singapore/1/57 strain received from the World Influenza Centre in London. This final vaccine was made by combining 0.5 ml of the above-mentioned mixed vaccine with 1 ml of Asian influenza vaccine, and was administered in two subcutaneous injections at a week's interval.

Of the 550 persons immunized who could be followed up, only six became infected with influenza. One of these infections occurred immediately after the first injection, four were mild, and one was severe.

La pandémie grippale de 1957 et les autres maladies respiratoires à virus dans le canton de Genève (Suisse)

par le Dr M. F. PACCAUD *et* B. PONCIONI, *Service des Virus, Institut d'Hygiène de Genève*

Le canton de Genève compte environ 238 000 habitants, et la ville de Genève 169 000. Comme sur tout le territoire de la Confédération suisse, la déclaration des cas de grippe y est obligatoire.

Le tableau 1 indique le nombre de cas et décès par grippe, pour le canton et la ville de Genève, d'après les statistiques du Service fédéral de l'Hygiène publique, à Berne.

En considérant ces chiffres, on peut dater approximativement le début de l'épidémie à Genève, au début de septembre. Le nombre de cas est maximum en octobre, puis diminue dès lors jusqu'en décembre. Durant ce mois et en janvier, on note une légère recrudescence.

Le taux de morbidité par grippe a été de 40 par 1000 habitants pour l'ensemble de l'année 1957, alors qu'il était de 17 par 1000 habitants en 1956. Le nombre des décès par grippe, pour le canton de Genève, passa de 0 en septembre à 13 en octobre, puis à 19 en novembre, pour s'abaisser à 7 en décembre, remonter à 10 en janvier, puis tomber à 2 et 1 respectivement en février et mars. De septembre 1957 à mars 1958, 52 décès ont été enregistrés, contre 8 durant la même période de 1956/57.

Nous n'avons observé à Genève qu'un seul cas d'encéphalite, qui a été fatal. Il s'agit d'une jeune fille de 15 ans, sans antécédents pathologiques, qui, 8 jours après une grippe banale, a présenté brusquement des vomissements bilieux, suivis de somnolence, puis d'un subcoma avec convulsions, aréflexie généralisée, hypertonie, cyanose, tachycardie et hyperthermie à 42°C. Le décès survint 24 heures après le début des symptômes.

L'autopsie mit en évidence une laryngo-trachéite œdémateuse, une broncho-pneumonie hémorragique bilatérale, une stéatose hépatique importante avec pétéchies sous-capsulaires. Le cerveau montrait une légère méningite lymphocytaire, de rares infiltrats périvasculaires, mais par contre un fort œdème cérébral, avec atteinte des neurones du cortex, tigrolytiques